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TITLE: SEMICONDUCTOR DEVICE PROVIDED WITH V-GROOVE STRUCTURE

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ABSTRACT:

PURPOSE: To easily obtain a quantum wire of good quality and to enhance the efficiency of a semiconductor device by a method wherein a groove whose cross section is V-shaped is formed in at least a part of a semiconductor substrate or of an epitaxial growht layer grown on the semiconductor substrate and an active layer is formed in the part of the bottom of the V-shaped groove.

CONSTITUTION: A semiconductor device has a structure wherein an Al<SB>0.5</SB>Ga<SB>0.5</SB>As clad layer epitaxially grown on a GaAs (100) substrate is formed, a V-groove is formed in the clad layer, a GaAs active

layer is formed and a second Al<SB>0.5</SB>Ga<SB>0.5</SB>As clad layer is formed additionally on the active layer. Then, the clad layer as the outside layer which comes into contact with the inside of a V-shaped structure on the slope of the V-groove has a relationship that the energy gap of the clad layer at the outside is larger than the energy gap of the clad layer at the inside. When such a structure is adoped, a current can be concentrated in the GaAs active layer situated at the bottom of the V-groove, and the structure can be used especially suitably for a laser diode or the like.

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